

WHAT IS CLAIMED IS:

1. A numerical control apparatus for machine tool,  
comprising:

an NC program storage portion for storing an NC program  
5 generated for machining a material into a desired shape;

a block skip command detection means for detecting whether  
a block skip command for skipping execution of blocks after  
a position where the block skip command is described is present  
in said NC program stored in said NC program storage portion  
10 or not;

a block skip end command detection means for detecting  
whether a block skip end command provided in connection with  
the block skip command to permit execution of blocks after a  
position where the block skip end command is described is present  
15 in said NC program stored in said NC program storage portion  
or not; and

a coordinate comparison means for performing comparison  
concerning a difference between coordinates on at least one  
control axis in said block skip command and said block skip  
20 end command.

2. The numerical control apparatus for machine tool  
according to claim 1,

wherein said coordinate comparison means performs  
25 comparison concerning a difference between coordinates on the

basis of selected tool numbers.

3. The numerical control apparatus for machine tool according to claim 1, further comprising:

5 a block skip erasing means for performing a process of erasing erasable block skip end commands and erasable block skip commands at the time of transformation of said NC program into said electronic cam program when a plurality of block skip command-block skip end command combinations are present in said  
10 NC program.

4. The numerical control apparatus for machine tool according to claim 1, further comprising:

a transformation judgment means for searching for "good" coordinates after said block skip end command when "no good" is decided as a result of comparison by said coordinate comparison means, and performing a judgment, when identical coordinates are detected, as to whether said NC program written in blocks between a block of said detected coordinates and said  
20 block skip end command can be transformed into an electronic cam program or not; and

a moving means for moving said block skip end command to the rear of a line on which said coordinates are detected when "good" is obtained as a result of the judgment by said  
25 transformation judgment means.

5. The numerical control apparatus for machine tool according to claim 1, further comprising:

a transformation judgment means for searching for "good" 5 coordinates after said block skip end command when "no good" is decided as a result of comparison by said coordinate comparison means, and performing a judgment, when identical coordinates are detected, as to whether said NC program written in blocks between a block of said detected coordinates and said 10 block skip end command can be transformed into an electronic cam program or not;

a movement judgment means for performing a judgment, when "no good" is given as a result of the judgment by said transformation judgment means, as to whether a command causing 15 "no good" of transformation can be moved to the rear of the block of the detected coordinates without any trouble; and a "no good" causal command moving means for moving said command causing "no good" of transformation to a line on the rear of the block of the detected coordinates when "good" is 20 given as a result of the judgment by said movement judgment means.

6. A numerical control apparatus for machine tool, comprising:

25 an NC program storage portion for storing an NC program

generated for machining a material into a desired shape;

a block skip command detection means for detecting whether a block skip command for skipping execution of blocks after a position where the block skip command is described is present  
5 in said NC program stored in said NC program storage portion or not;

a block skip end command detection means for detecting whether a block skip end command provided in connection with the block skip command to permit execution of blocks after a  
10 position where the block skip end command is described is present in said NC program stored in said NC program storage portion or not;

a block skip erasure judgment means for judging whether both the block skip command and the block skip end command  
15 detected by said block skip command detection means and said block skip end command detection means respectively can be erased or not;

a block skip erasure means for erasing said block skip command and said block skip end command when said block skip  
20 erasure judgment means makes a decision that these commands can be detected; and

a program transformation means for transforming said NC program into an electronic cam program.

25 7. A numerical control method for machine tool, comprising

the steps of:

- (a) reading an NC program;
- (b) applying a predetermined block skip pre-process to said NC program read by the step (a); and
- 5 (c) transforming said NC program subjected to said predetermined block skip pre-process by the step (b) into electronic cam data.

8. The numerical control method for machine tool according  
10 to claim 7, wherein the step (b) includes the steps of:

- (b-1) performing a block skip erasure process for erasing erasable block skip destinations and erasable block skip sources; and
- (b-2) applying a block skip destination changing process  
15 to at least one block skip remaining after erasure by the step (b-1).

9. The numerical control method for machine tool according  
to Claim 8, wherein the step (b-1) includes the steps of:

- 20 (b-1-1) performing a judgment, when there are a plurality of block skip processes, as to whether all commands between a block skip destination and a next block skip source are only commands having no influence on electronic cam data transformation; and
- 25 (b-1-2) erasing said block skip destination and said next

block skip source when the judgment in the step (b-1-1) makes a decision that there are only commands having no influence on electronic cam data transformation.

5 10. The numerical control method for machine tool according to claim 8, wherein the step (b-2) includes the steps of:

(b-2-1) comparing coordinates of the block skip source with coordinates of the block skip destination to thereby judge whether the coordinates of the block skip source are the same  
10 as the coordinates of the block skip destination or not;

(b-2-2) searching for a coordinate command identical to the coordinates of the block skip source after the judgment when the judgment of the step (b-2-1) makes a decision that the coordinates of the block skip source are different from  
15 the coordinates of the block skip destination;

(b-2-3) judging whether all commands between the new coordinate command searched for by the step (b-2-2) and the coordinates of the block skip destination are only commands having no influence on electronic cam data transformation; and

20 (b-2-4) moving the block skip destination command to the rear of the new coordinate command when the judgment in the step (b-2-3) makes a decision that there are only commands having no influence on electronic cam data transformation.

25 11. The numerical control method for machine tool according

to Claim 10, further comprising the steps of:

(d) performing a judgment, when there is a decision that all commands between the new coordinate command and the coordinates of the block skip destination are not only commands having no influence on electronic cam data transformation, as to whether a command having influence on electronic cam data transformation can be moved to the rear of the new coordinate command or not;

(e) moving the command having influence on electronic cam data transformation to the rear of the new coordinate command when the judgment in the step (d) makes a decision that the command having influence on electronic cam data transformation can be moved without any trouble; and

(f) further moving the block skip destination command to the rear of the new coordinate command.

12. The numerical control method for machine tool according to claim 10, wherein the judgment as to whether the coordinates are the same or not is based on selected tool numbers.